The dental light section presents details and specifications on dental lights that work with the A-dec 500 system. These lights provide color-corrected, low UV light, and three intensity settings. The lights are controlled from the light head, or from the touchpad on an A-dec 500 delivery system, or assistant's instrumentation.

This section provides information related to service, maintenance, and adjustments. Detail on how to service the A-dec 500 and 6300 dental lights and troubleshooting for specific problems is presented. For information on service parts, see the *Genuine A-dec Service Parts Catalog* or contact A-dec customer service.

Dental Light Specifications

Electrical

100 VAC, 110-120 VAC, or 220-240V AC (Post-, Ceiling-, Wall-, Preference- and Track-mounted Lights)

Operating wattage:	96 watts
Heat output:	325 BTU/hour

Lamp

Lamp:	Quartz Xenon Halogen, single-end prongs, extended life
Lamp rating:	24 V/150 watts
Color temperature:	5000 Kelvin
Light pattern:	3.3" x 6.3" at 27.6" (85 mm x 160 mm at 700 mm)

Nominal Light Intensity

Composite:	8,000 lux (743 fc)
Medium:	20,000 lux (1858 fc)
High:	24,000 lux (2230 fc)

Specifications are subject to change without notice.

On/Off Functions

The dental light has additional features when used with an A-dec 500 system.

On/Off Switch

An On/Off switch is located on the touchpad. Press and hold the **Dental Light** button, to turn off the dental light.

Auto On/Off Function

The dental light will turn On, when the A-dec 500 chair reaches programmed positions 1, 2, or 3. The dental light turns Off, as soon as **Position O** is pressed. When **Position 3** is used as a last position/return function, the light will turn Off when **Position 3** is pressed the first time. It will turn On after the button is pressed a second time when it reaches the last position.

The Auto On/Off feature is disabled by pressing and holding the **Program** button and the **Dental Light** button together for three seconds. One beep confirms that the auto On/Off feature is disabled. To enable the Auto On/Off feature, repeat. Three beeps confirms that Auto On/Off is enabled.

Three-Way Switch

The dental light button on the touchpad works as a three-way switch with the On/Off switch, allowing the light to turn On or Off from the touchpad or the On/Off switch.

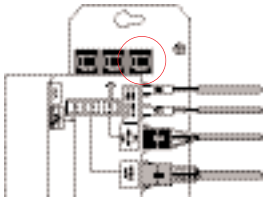
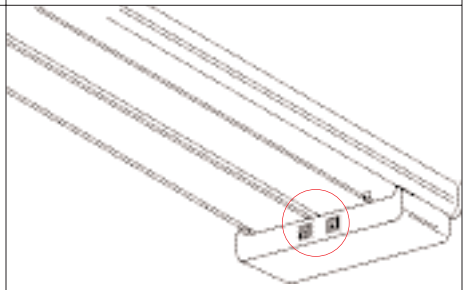
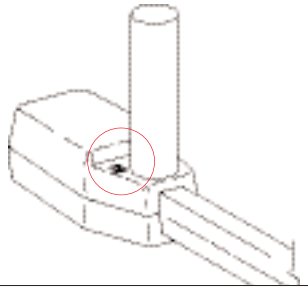
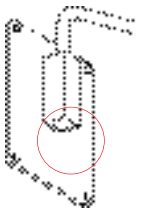
Intensity Switches

There are three intensity settings for the A-dec 571 and 6300 dental lights. Move the intensity switch to toggle between high, medium, or composite settings.

Press **Dental Light** on the A-dec 500 touchpad to toggle between intensity settings. The dental light can toggle between composite and high intensity settings or composite and medium intensity settings, depending on the location of the dental light intensity switch. The indicator light next to the touchpad button flashes when in the composite setting mode.

How to Locate Circuit Breakers

A circuit breaker will interrupt the flow of electricity under abnormal conditions. If the circuit breaker should trip, inspect the wiring to ensure there are no shorts, and reset the circuit breaker by flipping the switch.

Light Name	Circuit Breaker Location	Light Name	Circuit Breaker Location
A-dec 571 **NOTE**: The circuit breaker for the A-dec 571 light is located on the chair power supply inside the chair motor pump area.		Track	
Ceiling-mounted		Wall-mounted	
Preference-mounted			

Light Head (P/N 28.1007.00)

Item #	Part Number	Description
1	28.1004.00	Lamp and holder
2	041.179.01	Lamp
3	75.0084.00	Holder only
4	28.1536.00	Light yoke plug
5	90.0463.01	Lamp socket kit
6	28.1012.00	Shield bracket assembly, Pkg 2
7	28.1001.00	Pivot stop
8	43.0054.00	Intensity switch kit
9	90.1039.00	On/Off switch kit
10	28.1464.01	Switch housing kit
11	90.0367.01	Light handle kit
12	002.135.00	Screw

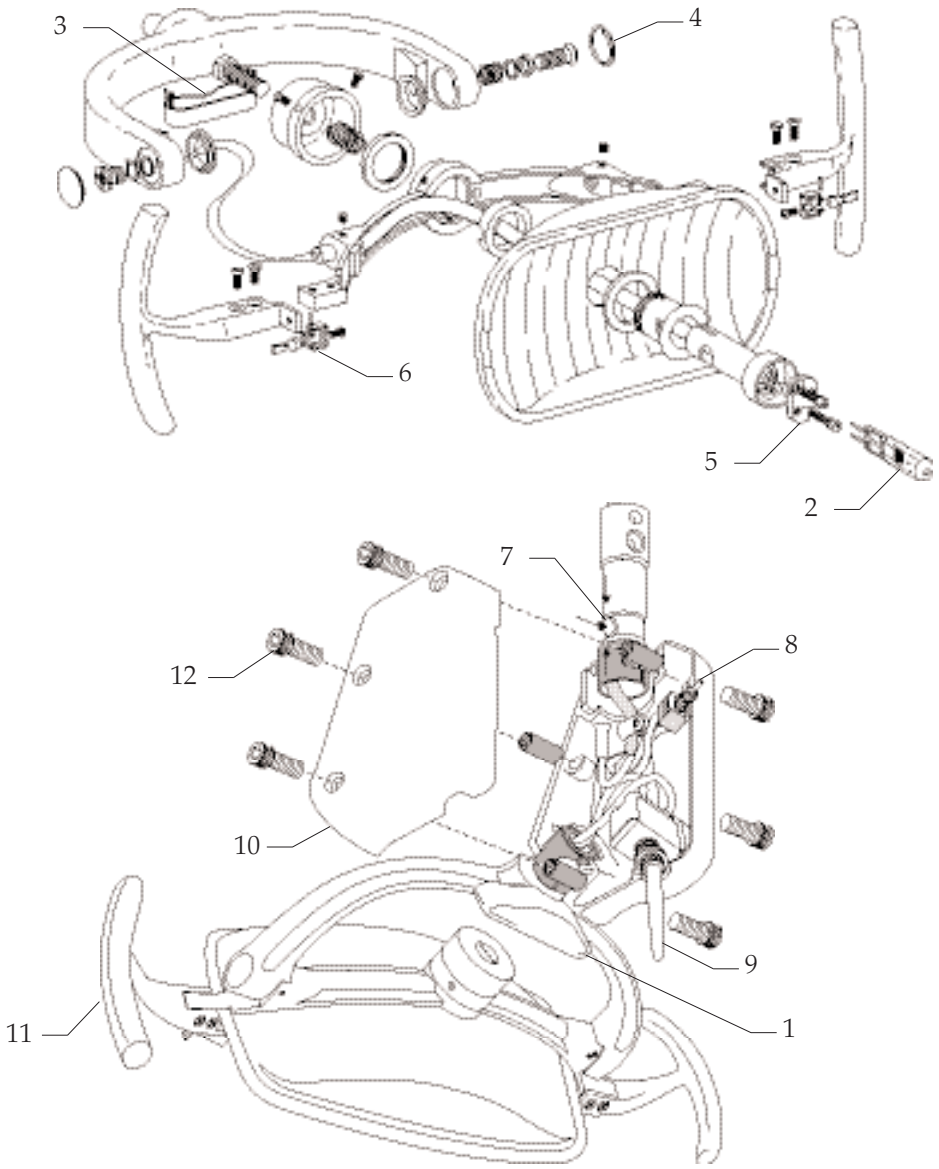


Figure 102. Identification of the light head components.

How to Identify Intensity Switch Connections and Data Line Flow

The three-position intensity switch is used to select light intensity at one of three settings: high, medium, or composite. The replacement kit for the intensity switch is P/N 43.0054.00.

A-dec 571 Light

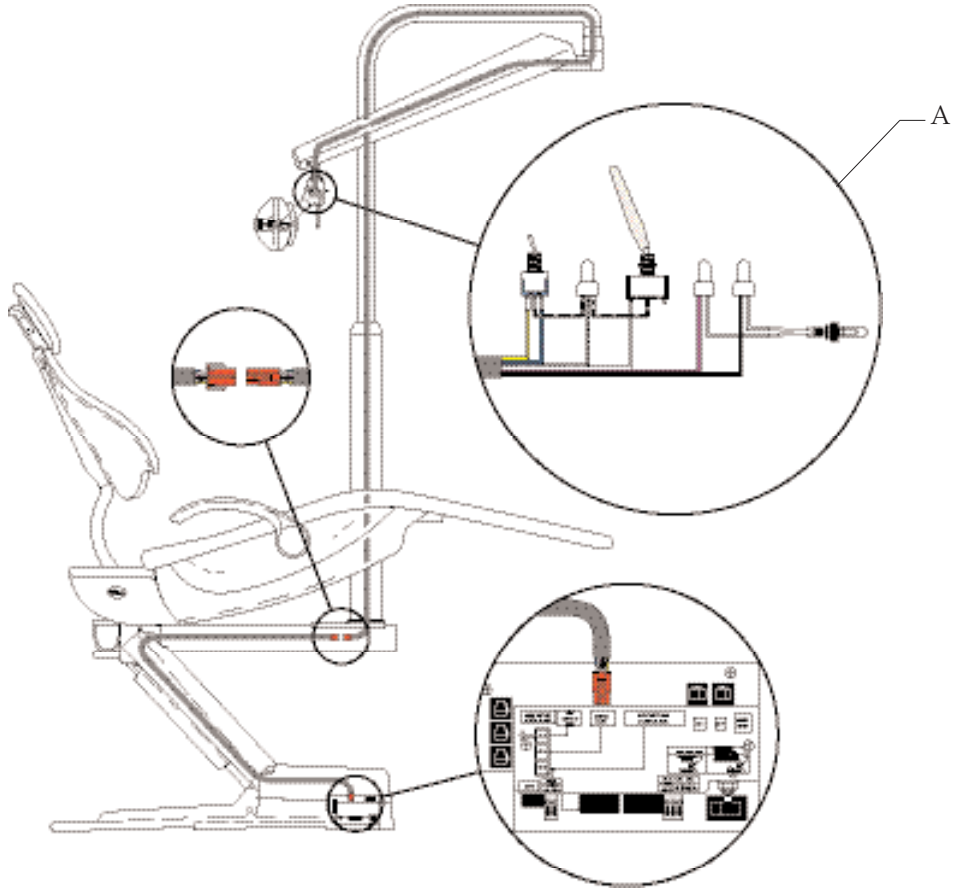


Figure 103. A-dec 571 light switch connections. (A) switch and lamp connections

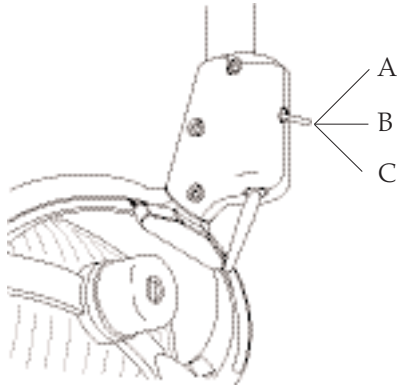


Figure 104. Light intensity setting. (A) high; (B) medium; (C) composite

Ceiling-, Wall- and Preference-mount Lights

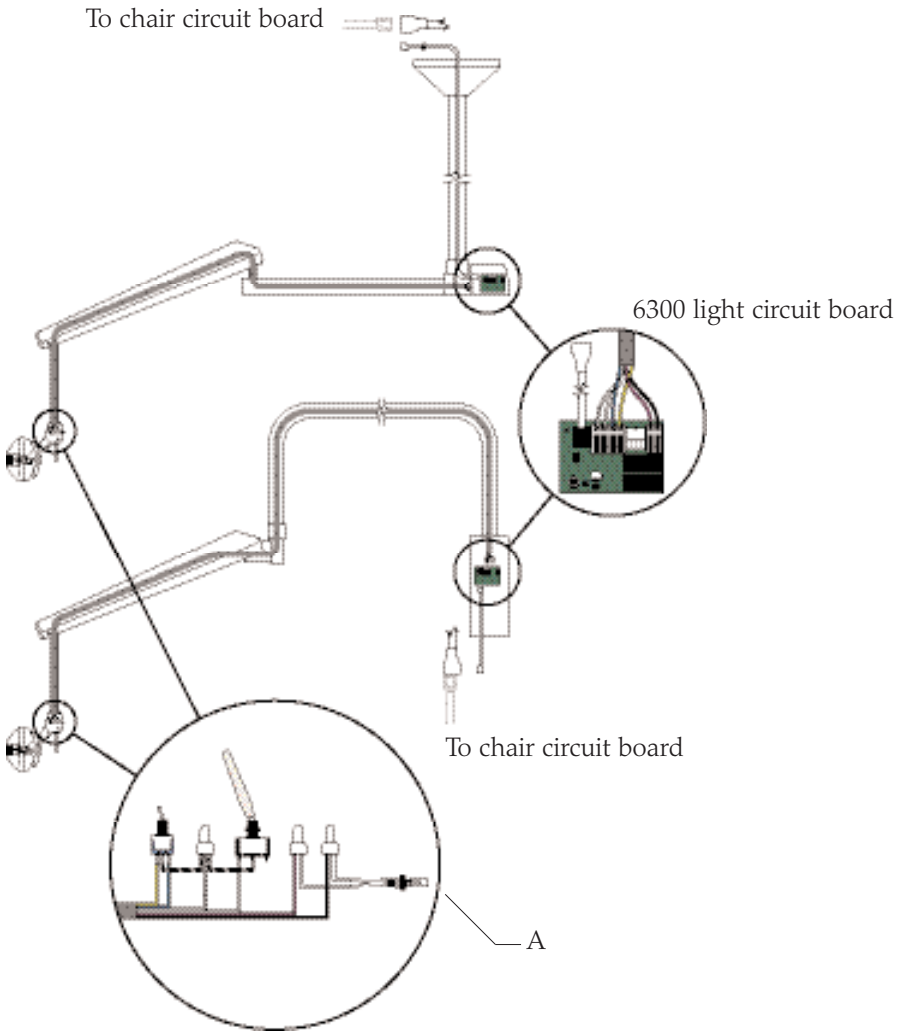


Figure 105. A-dec 6300 ceiling and wall-mounted light switch connections and data line. (A) switch and lamp connections

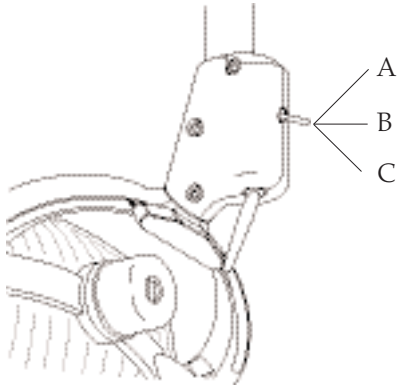


Figure 106. Light intensity setting. (A) high; (B) medium; (C) composite

Track Light

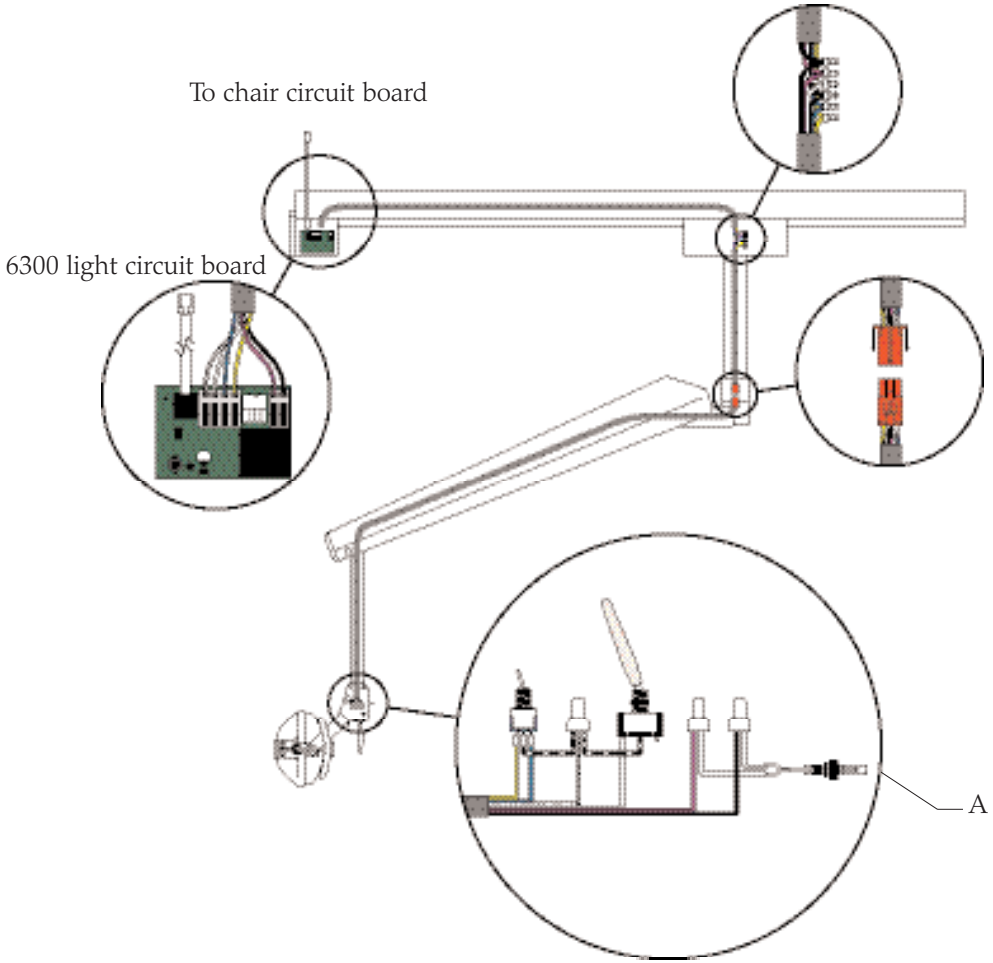


Figure 107. A-dec 6300 track light switch connections and data line. (A) switch and lamp connections

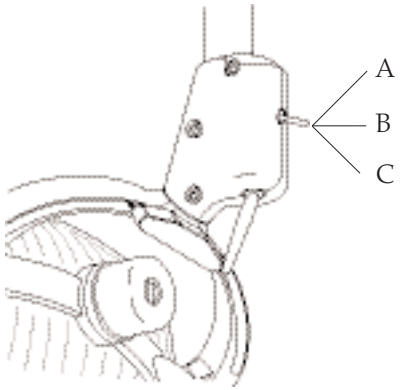
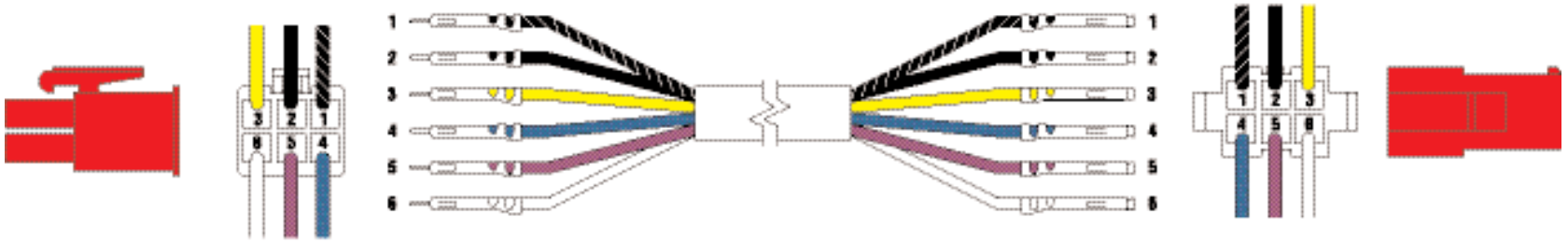


Figure 108. Light intensity setting. (A) high; (B) medium; (C) composite

Power Cable (P/N 28.1584.00)

Pin	Voltage	Wire
1	0 VDC (circuit ground)	Black/White
2	0 VAC	Black
3	5 VDC = high or medium 0 VDC = composite	Yellow (composite)
4	5 VDC = medium or composite 0 VDC = high out	Blue (high)
5	17/16/12.1 VAC	Violet
6	5 VDC = On/Off toggle = open 0 VDC = On/Off toggle = closed	White (On/Off)

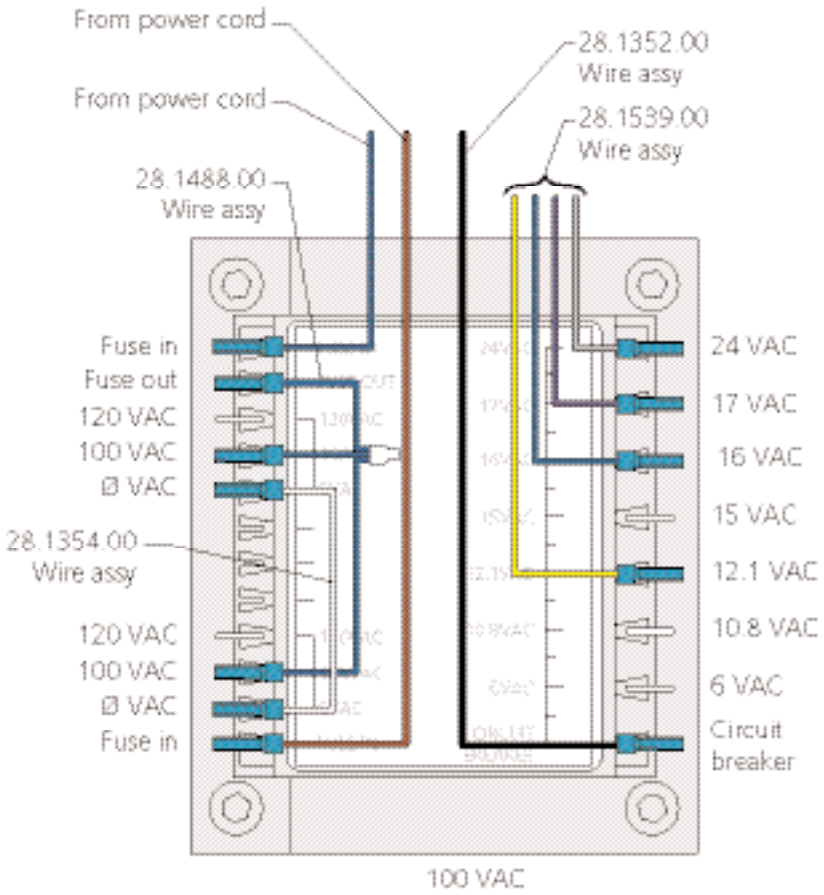
NOTE: If Pin 3 and Pin 4 are 5 VDC, then the output voltage on Pin 5 is medium intensity.



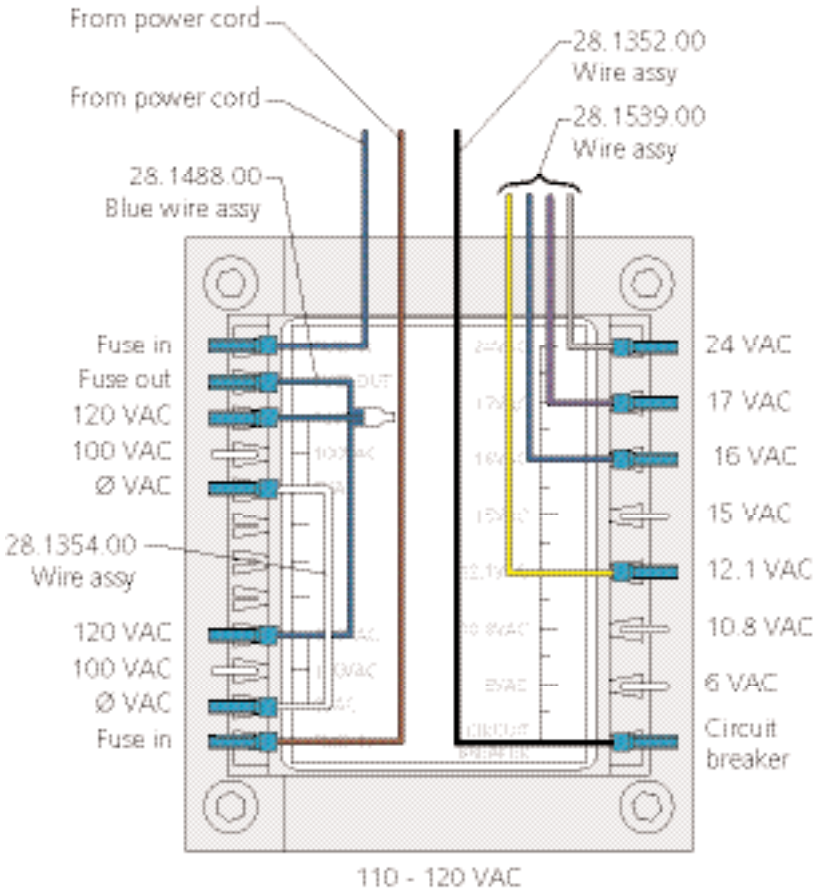
How to Wire the Transformer

100 VAC Transformer (P/N 28.1588.00)

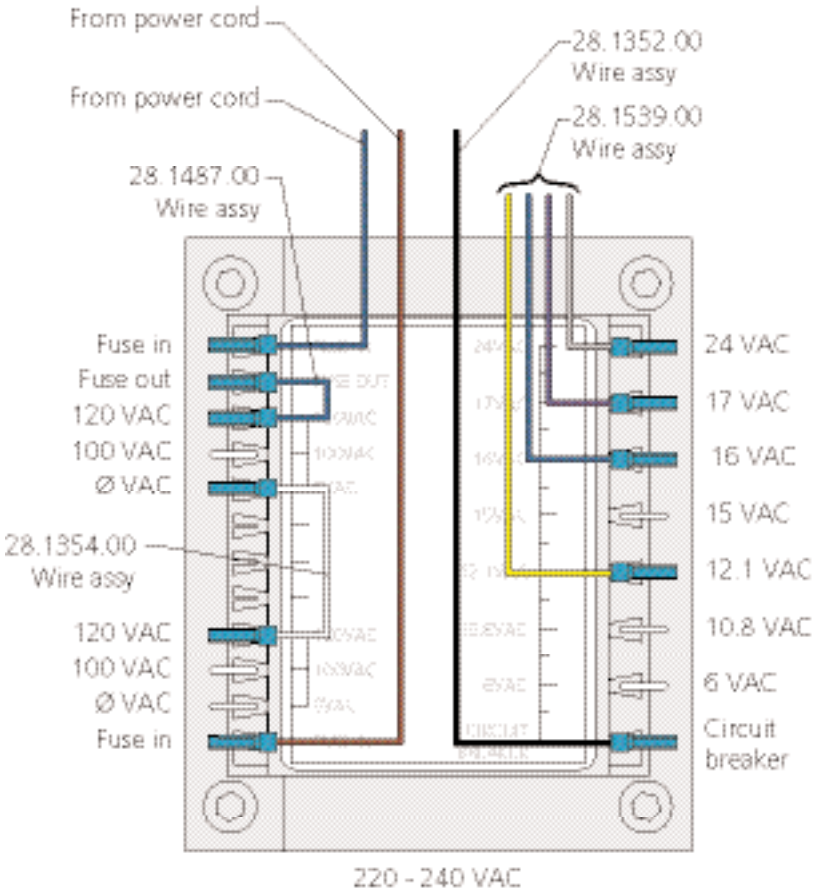
All voltages of transformers are the same part number but wired differently for each voltage.



110-120 VAC Transformer
(P/N 28.1588.00)



220-240 VAC Transformer
(P/N 28.1588.00)



How to Identify Circuit Board Components

A-dec 511 Chair Circuit Board (P/N 90.1072.00) for A-dec 571 Lights

Item #	Description
1	**P7**, **P8**, **P9** - Data line ports
2	**DS4** - Stop switch LED (limit switch) and P10 connector
3	**DS5** - Back potentiometer LED and P1 connector
4	**DS6** - Base potentiometer LED and P2 connector
5	**P5** - Footswitch connector
6	**P3** - Test points
7	**DS12** - Base down LED and relay
8	**DS11** - Base up LED and relay
9	**DS10** - Back down LED and relay
10	**DS9** - Back up LED and relay
11	**DS1** - AC power LED
12	**DS2** - Status LED
13	**DS3** - Data LED
14	**DS13** - Chair lockout LED and terminal strip J1
15	**J2** - Ø VAC terminal strip (output)
16	**J2** - 24 VAC terminal strip (output)
17	**P4** - Input power and dental light connector
18	**J3** - Vacuum relay output terminal strip
19	**P11** - Pump motor and solenoid connector
20	**DS8** - Dental light relay
21	**DS7** - Dental light relay

Function	K1 (DS8)	K6 (DS7)	Output
Off	Off	Off	0 VAC
High intensity	On	Off	17 VAC
Composite intensity	Off	On	12 VAC
Medium intensity	On	On	16 VAC

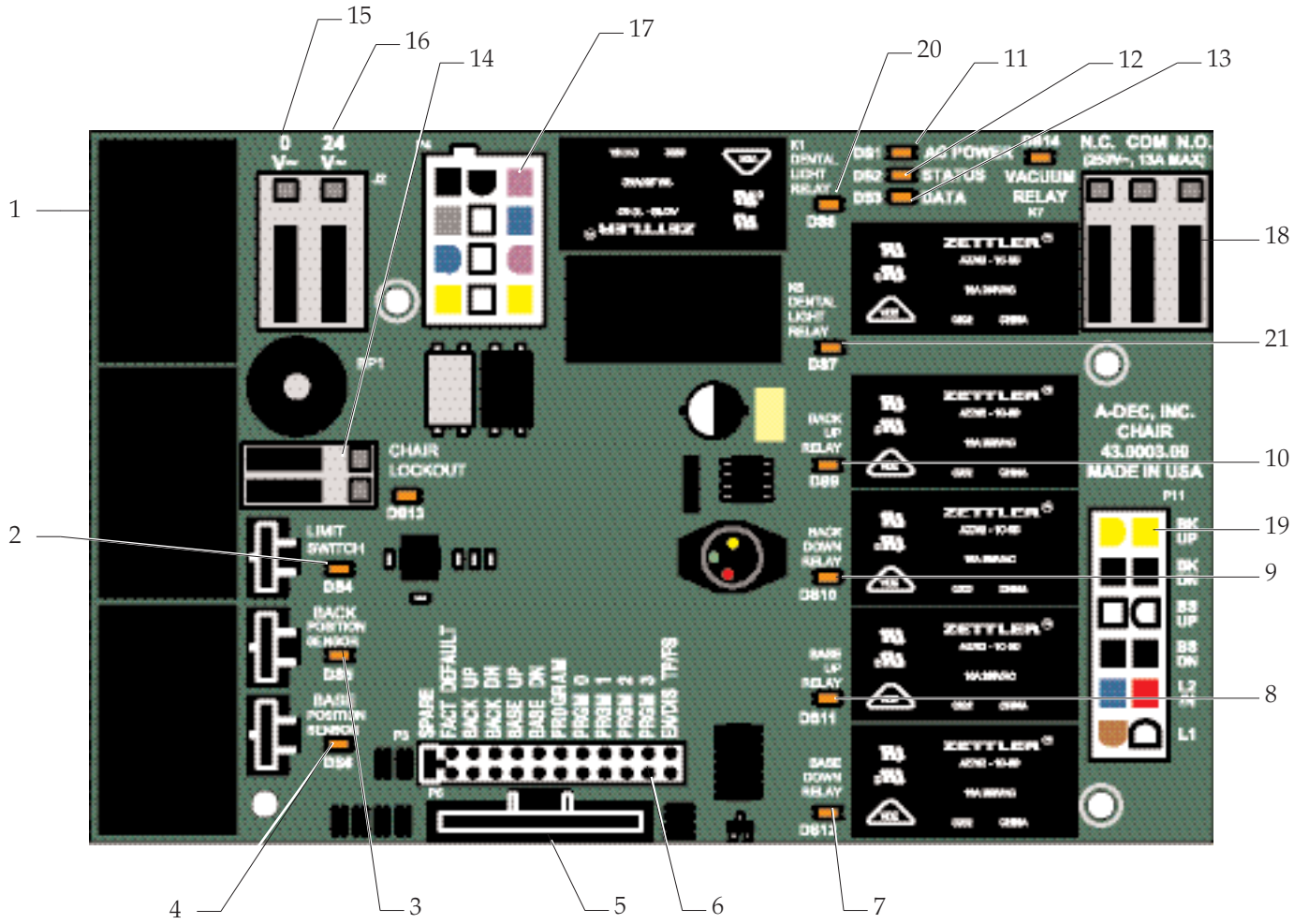


Figure 109. A-dec 511 chair circuit board components.

LED Identification

LED	Status	Description
DS1 - AC power LED	Off Green, steady	No 24 VAC power, tripped circuit breaker, power supply turned off, no line voltage 24 VAC at the terminal strip
DS2 - Status LED	Off Green, steady	System is not functioning, no power or circuit board has failed Normal operation
DS3 - Data LED	Off Green, steady Green, blinking	No DCS communication, not connected to the DCS, or DCS has failed Detects active DCS Valid DCS message
DS4 - Chair limit switch	Off Red	Closed, (normal) Open, (activate)
DS13 - Chair lockout	Off Red	Open, (normal) Closed, (activate)
DS5 + **DS6** - Chair potentiometers	Off	Potentiometer: • Not connected or bad connection • Moving in wrong direction • Limited range of motion, or • Cable is not on wheel.
	Yellow, steady	Normal operation
	Yellow, fast blink	Upper end of travel
DS9, **DS10**, **DS11**, **DS12** - Chair relay LEDs	Off On	Relay is off Relay is on
DS7, **DS8** - Dental light relay LEDs	Off On	Relay is off Relay is on
DS14 - Vacuum relay LED	Off On	Relay is off Relay is on

6300 Dental Light Relay Circuit Board (P/N 28.1577.00)

The 6300 dental lights are controlled by the dental light circuit board located in the dental light transformer housing.

Item #	Description
1	**DS1** - AC power LED
2	**DS2** - Status LED
3	**DS3** - Data LED
4	**DS4** - Dental light relay
5	**DS5** - Dental light relay
6	**P1** - Input power
7	**P2** - Data line port (DCS)
8	**J1** - Toggle switch inputs
9	**J2** - Dental light output power

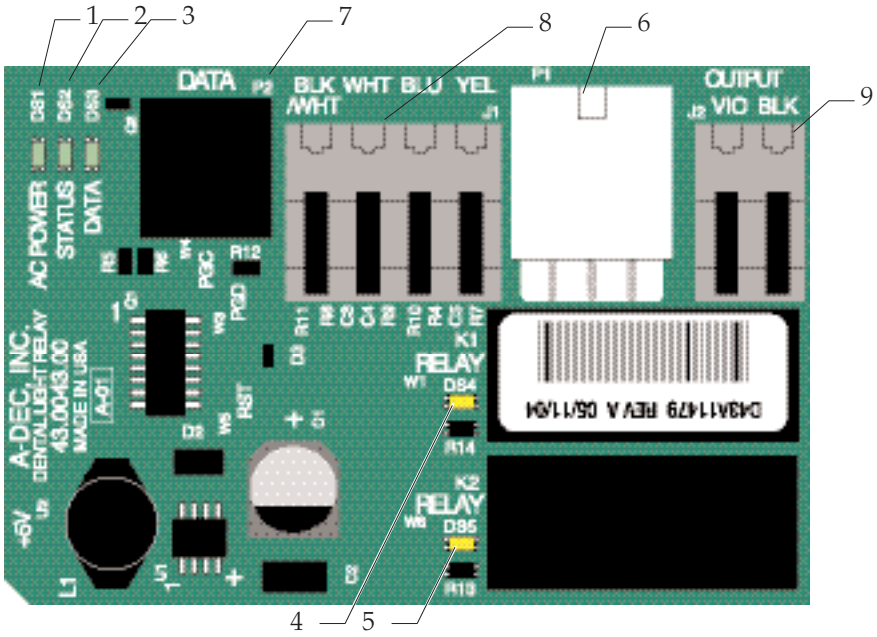


Figure 110. 6300 dental light relay circuit board.

Function	K1 (DS4)	K2 (DS5)	Output
Off	Off	Off	0 VAC
High intensity	On	Off	17 VAC
Composite intensity	Off	On	12 VAC
Medium intensity	On	On	16 VAC

Light Circuit Board LED Identification

LED	Status	Description
DS1 - AC power LED	Off Green, steady	No 24 VAC power, tripped circuit breaker, power supply turned off, no line voltage 24 VAC at the terminal strip
DS2 - Status LED	Off Green, steady	System is not functioning, no power or circuit board has failed Normal operation
DS3 - Data LED	Off Green, steady Green, blinking	No DCS communication, not connected to the DCS, or DCS has failed Detects active DCS Valid DCS message
DS4, **DS5** - Dental light relay LEDs	DS4 DS5 Off Off On Off Off On On On	 Off High Composite Medium

How to Adjust the Dental Light

The light is preset for proper illumination at 27.6 inches (700 mm) from the black nose piece to the oral cavity.
The light has a focal adjustment range between 18" and 31"(460 mm and 790 mm).

Focus

1. Place a white towel over the chair headrest to represent the oral cavity.
2. Position the light head at the distance normally used when working in the oral cavity (select a distance representative of most procedures).
3. Turn the light ON.
4. Use a large screwdriver to turn the focus adjusting screw until the light, within the borders of the light pattern, is most uniform.

Light Head Rotation (Horizontal)

The light head needs adjusting if it is difficult to position, moves too easily, or tends to slip out of position.

Left/Right Rotation

- Turn the adjustment screws beginning with the screw at the top of the switch housing.
- Light head moves too easily, or tends to drift out of position.
  Increase the tension by turning the screws clockwise.
- Light is difficult to move.
  Loosen the tension by turning the screws counterclockwise.

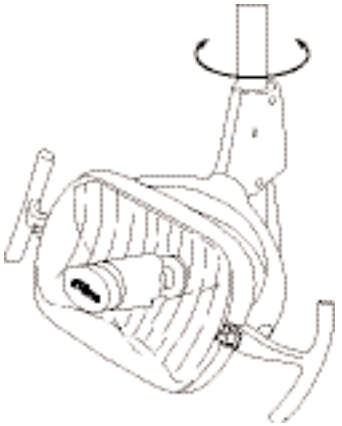


Figure 111. Left/right rotation.

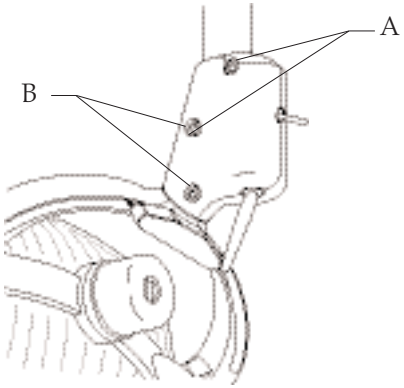


Figure 112. Rotation adjustment.
(A) left/right rotation tension screw;
(B) diagonal rotation tension screw

Diagonal Rotation (Third Axis)

Turn the adjustment screws, beginning with the screw at the bottom of the switch housing.

- Light head moves too easily, or tends to drift out of position, increase the tension by turning the screws clockwise.
- Light head is difficult to move.
  Loosen the tension by turning the screw counterclockwise.
- Tighten the adjustment screw until they are tight to eliminate all movement in the diagonal axis.

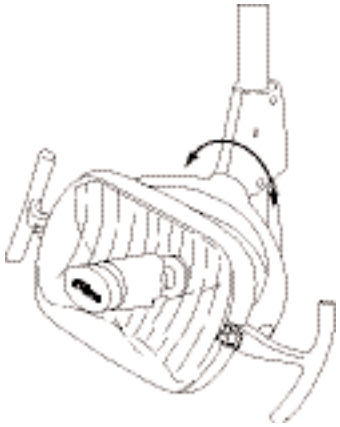


Figure 113. Diagonal axis rotation.

Up/Down Rotation (Vertical)

This adjustment only needs to be made to one side of the light head.

1. Loosen the setscrew.
2. Remove the light yoke plug.
3. Use a large flat-blade screwdriver to turn the adjustment screw under the light yoke plug.
   - Light head moves too easily, or tends to drift out of position.
     Increase the tension by turning the screw clockwise.
   - Light head is difficult to move.
     Loosen the tension by turning the screw counterclockwise.
   - Retighten the setscrew, and reinstall the light yoke plug.

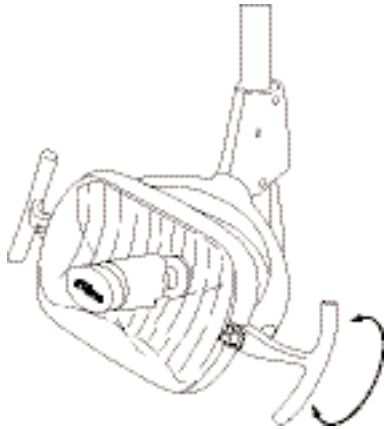


Figure 114. Up/down rotation.

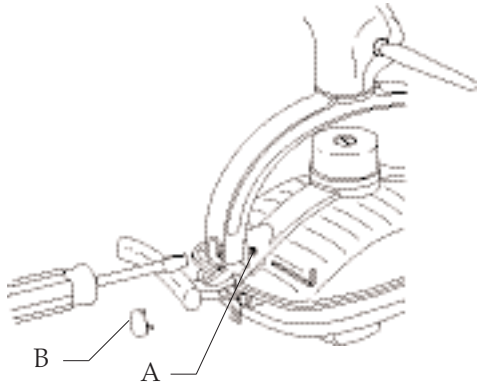


Figure 115. Up/down rotation adjustment.
(A) setscrew; (B) light yoke plug

How to Adjust the Flexarm

Remove the screw and cover from the flexarm. Turn the tension adjustment nut inside the flexarm using a 1/2" open end wrench. Tighten the nut by turning it clockwise, if the flexarm moves too easily, or tends to drift down by itself. Loosen the nut by turning it counterclockwise, if the arm drifts up.

NOTE: A travel stop limit kit (P/N 90.1044.00) must be installed to limit the upward and downward motion of the flexarm.

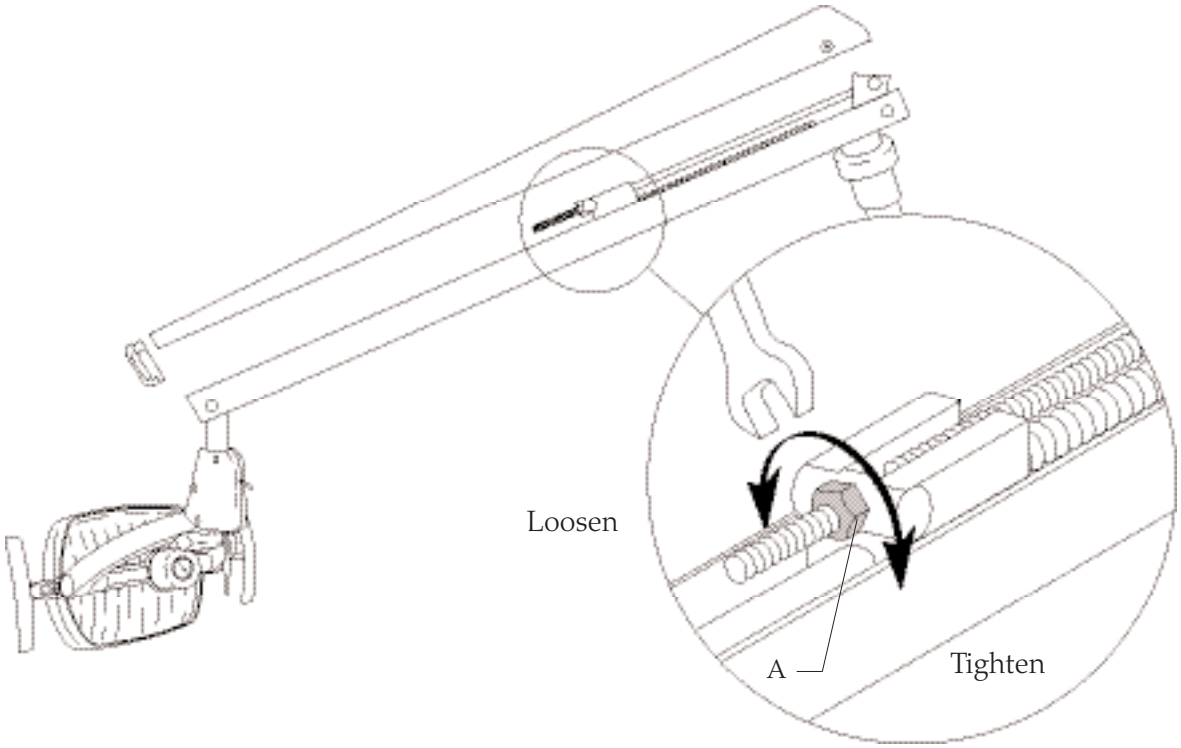


Figure 116. Flexarm adjustments. (A) adjustment nut

How to Maintain the Dental Light

Light Shield Cleaning

1. Turn Off the dental light.

WARNING: To avoid personal injury, be sure that the light has cooled before cleaning it.

2. Release the toggles on either side of the light to remove the light shield.
3. Use a 100% cotton gauze pad or a soft, dry, lint-free cloth to clean the light shield and reflector.

If necessary, soak the pad or cloth with water or with a diluted solution of mild dish washing liquid before cleaning. Make certain no residue remains on the surface.

Do not use abrasives or chlorine (such as household bleach) on the surface of the reflector. These can damage or discolor the reflector surface, impairing the effectiveness.

CAUTION: Do not rub heavily, clean the light shield when it is hot, or soak the shield assembly in cleaning solution. Doing so may damage the shield assembly components. Clean the light shield only as instructed.

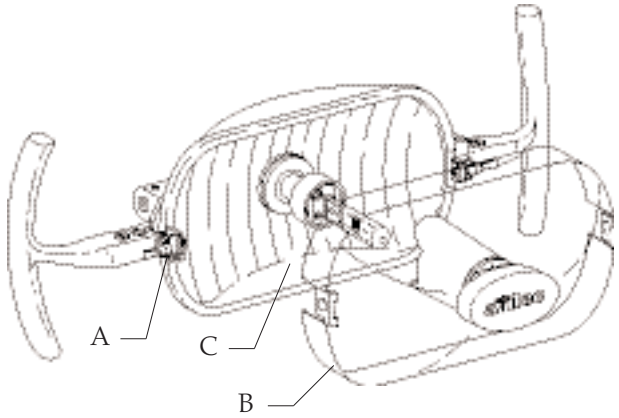


Figure 117. Light shield cleaning. (A) toggle; (B) light shield; (C) reflector

Lamp Replacement

Pull the spare lamp holder from the light head. Remove the lamp from the holder, but do not remove the outer wrapper. Finger oils can affect light performance and severely limit lamp life. If lamp is inadvertently touched, gently clean it with cotton dampened with isopropyl or ethyl alcohol.

WARNING: To avoid burning fingers, allow the lamp to cool before removing. Never operate the light with the light shield removed. The clear shield minimizes UV light output. The light shield is also protection in the unlikely event that the lamp shatters.

1. Turn Off the light, and allow the light to cool.
2. Release the toggles on the light shield and set the shield aside.
3. Use a gauze pad or cloth to protect fingers. Carefully pull the old lamp from its socket and discard.
4. Hold the new lamp in its outer wrapper with the pins facing away, and carefully insert it in the socket. The lamp base is fragile and can break under excess pressure.
5. Remove and discard the outer wrapper, reinstall the light shield, and secure with the toggles.
6. Verify the operation of the light by turning it on and operating it at each intensity setting.

CAUTION: Use of halogen bulbs other than A-dec P/N 041.179.01 (OSRAM HLX 64640, 150W 24V) may result in damage to the bulb socket.

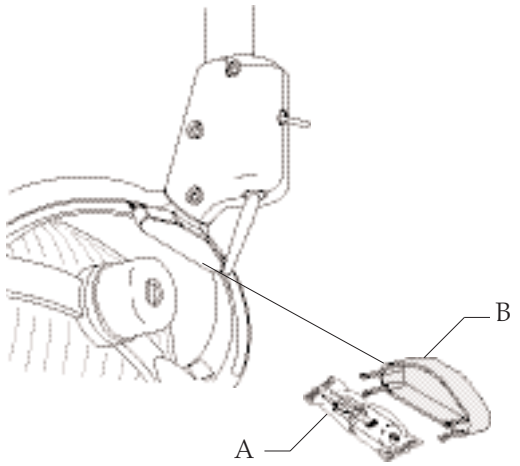


Figure 118. Remove lamp from holder. (A) lamp; (B) holder

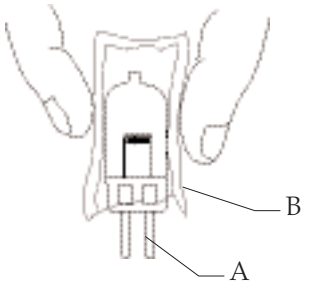


Figure 119. Insert lamp. (A) new lamp; (B) outer wrapper

How to Troubleshoot the Dental Light

Tips and troubleshooting information are listed in the table to assist in diagnosing dental light problems. This table is not intended to cover every situation, but does include the most common problems that may be encountered.

Problem	Possible Cause	Action
Light head is loose or difficult to position	Rotation tension screws are too loose or tight	Adjust the appropriate axis tension
Flexarm drifts	Tension adjustment nut inside the flexarm is too loose or tight	Adjust the flexarm counterbalance
Track light trolley drifts	Track is not level	Use wedges to level the track light ceiling pallet (P/N 017.017.00)
Track trolley light bounces back when pushed to the end of the track	Power cable is hanging up inside the track	Check power cable in track for proper routing
Light intensity is dim, inconsistent, or the color is distorted	Reflector or light shield may be damaged, the intensity switch may be in the wrong position	1. Clean the reflector and light shield. 2. Check the intensity switch position. 3. Check the line voltage at the wall. 4. Check the light shield for severe abrasions, and replace if necessary. 5. Check the color of the lamp, replace if discolored.
Unsatisfactory light pattern	Light is out of focus, reflector or light shield may be damaged	1. Focus the light. 2. Check the light shield for severe abrasions, and replace if necessary. 3. Clean the reflector and light shield.
Light does not function	No power to the light, defective socket, lamp has failed, or no power to the transformer	Verify the dental light is connected to a working power source. Ensure all electrical switches are in the On position. Verify the power supply air-electric switch has sufficient air pressure to close. Check for loose connections. Replace the socket, replace the lamp.
One or more intensity positions do not function	Transformer is not supplying one or more voltages	Check for loose connections at the transformer. Measure the transformer output voltages. Check the power cable for continuity.

Thank You

Thank you for taking time to use the *A-dec Service Guide, Volume II*. We would appreciate any feedback or comments you have about this document. Please mail, email, or phone us with your input. You can reach us at:

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